COMPACT DISC PLAYER

DP-M87

SERVICE MANUAL

ADDITIONAL

KENWOOD

Metallic cabinet
(A01-3079-11)

Panel (Tray)
(A29-0351-02)

Panel (Front)
(A60-0447-12)

Foot (Front)
(J02-1040-05)

Escutcheon
(B07-2249-03)

Front glass
(B10-1984-03)

Cord with connector
(E30-2631-15)

Rectangular receptacle (System control)
(E08-0312-05)

Phono jack (Line out)
(E63-0068-15)

Foot (Rear)
(J02-0366-15)
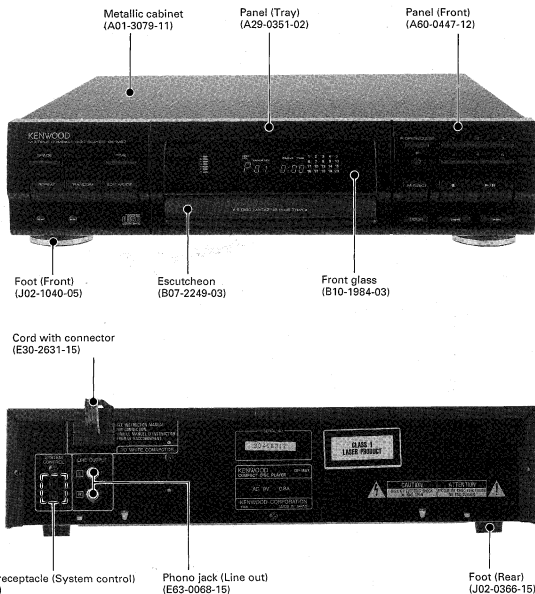
This service manual is available of changing information from serial No. 31240001.
Refer to DP-MA5/MA9 service manual (B51-4588-00), if need description in detail.

CAUTION : When doing repair of DP-M87 be
sure to have the customer bring the A-57, A-77,
A-87, A-97 or use power supply jig RM-90PS, or
supply to 9V AC to terminal Nos 1 and 2 of WH4
on the X25-5350 (X25-5440) PC board ass'y. If
not get 9V AC, please order the A-848's power
transformer (parts No. L07-0038-05 / 120V /
220V / 240V). Refer to the DP-911 service man-
ual. Don't use the "RHEOSTAT".

DP-M87

CONTENTS/ACCESSORIES

CONTENTS

NOTE : Refer to DP-MA5/MA9 service manual (B51-4588-00), if need description in detail.

ACCESSORIES   Magazine is packed with the CD player.

- FM indoor antenna 1
  (T90-0175-05)

- AM loop antenna 1
  (T90-0174-05)

- Antenna adaptor 1
  (T90-0185-05) : 75Ω / 300Ω
  T,E type only

- Loop antenna stand 1
  (J19-2815-04)

- Audio cords
  (E30-0505-05) 3
  (E30-0615-05) 1

- System control cords
  (E30-2627-05) 1
  (E30-2628-05) 1

- AC plug adaptor 1
  (E03-0115-05) : E type only

  For the unit with a European
  AC plug in areas other than Europe.

- Magazine 1
  (J19-3394-13)

- Battery (AAA/R03) 2
  (–)

- Remote control unit 1
  (X94-1011-41 : RC-77M) K-77M / 88M, MIDI M-57M / M-77M
  (X94-1050-11 : RC-97M) K-99M, MIDI M-97M

  Battery cover (A09-0126-03) K-77M / 88M, MIDI M-57M / M-77M
  Battery cover (F07-0721-23) K-99M, MIDI M-97M

For M,X type

System name	Amp	Tuner	Cassette deck	CD player	Graphic equalizer (option)	Speaker
K-77M	A-57	T-76	X-57	DP-M87	GE-560	S-6M
K-88M	A-77	T-76	X-87	DP-M87	GE-760	S-8M
K-99M	A-87	T-76	X-87	DP-M87	GE-970	S-10M

For E,T type
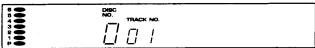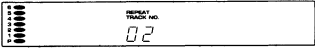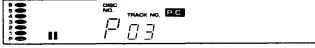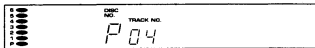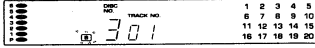
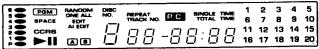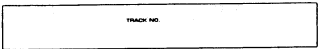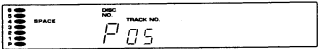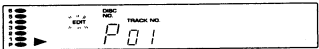| System name	Amp	Tuner	Cassette deck	CD player	Graphic equalizer (option)	Speaker
MIDI M-57M	A-57	T-76L	X-57	DP-M87	GE-560	LS-56
MIDI M-77M	A-77	T-76L	X-87	DP-M87	GE-760	LS-76
MIDI M-97M	A-97	T-76L	X-87	DP-M87	GE-970	LS-97

CIRCUIT DESCRIPTION
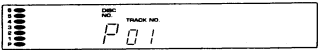
1. Test Mode

Setting the test mode

This microprocessor built in this unit (X32-) can be put to TEST MODE by just short-circuiting the test pins (#2 and #3).

| No.	Input key	Function	Display
1	STOP	(1) Focusing servo ....OFF (2) Tracking servo ....OFF (3) Feed servo ....OFF	DISC NO. TRACK NO. *U 0 1*
2	REPEAT	(1) Laser (In STOP mode only) ....ON	REPEAT TRACK NO. *0 2*
3	RANDOM	(1) Focusing servo ....ON (2) Tracking servo ....OFF (3) Feed servo ....OFF	DISC NO. TRACK NO. P.C ‖ *P 0 3*
4	TIME	(1) Focusing servo ....ON (2) Tracking servo ....ON (3) Feed servo ....OFF	DISC NO. TRACK NO. *P 0 4*
5	PLAY	(1) Focusing servo ....ON (2) Tracking servo ....ON (3) Feed servo ....ON	SPACE DISC NO. TRACK NO. *P 0 5*
6	DISC 1	Load No.1 disc to No.6 in order.	DISC NO. TRACK NO. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 *1 0 1* 16 17 18 19 20
7	DISC 2	Read the TOC (table of contents) of disc No.3 to No.6 in order. TEST mode is cancelled after reading the TOC of No.6 disc, and then playback the 1st track.	DISC NO. TRACK NO. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 *3 0 1* 16 17 18 19 20

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CIRCUIT DESCRIPTION

No.	Input key	Function	Display
8	DISC 3 – 6 DISC P	Load the decided No. disc which is pressed by the key and set to STOP mode. ex. Disc No.4 key is pressed (PLAY, CHECK and CLEAR keys are available to operate).	*(display: DISC NO. / TRACK NO.)* P 01
9	UP	Turns all FL display lamps ON.	*(all display lamps illuminated)* 888-88:88
10	DOWN	Turns all FL display lamps OFF. "DISC" and "1 ~ 6" are not off because circuit is static operation.	*(display: TRACK NO.)*
11	EDIT	(1) Door opens. (2) P1 tray come out. Press "EDIT" key, "PLAY MODE".	*(display: SPACE / DISC NO. / TRACK NO.)* P 05
12	FF	In the STOP mode, moves the pickup slightly toward the outer position of disc.	
13	FB	In the STOP mode, moves the pickup slightly toward the inner position of disc.	
14	SPACE	High-speed playback CHECK mode (in stop mode only) playback P1 disc in high-speed mode. If press "SPACE" key, change to normal mode. In this mode, all keys are available.	*(display: EDIT / DISC NO. / TRACK NO.)* P 01

CIRCUIT DESCRIPTION

2. Microprocessor : SC75217GF-642 (IC6)

2-1. Pin connection diagram

DP-M87
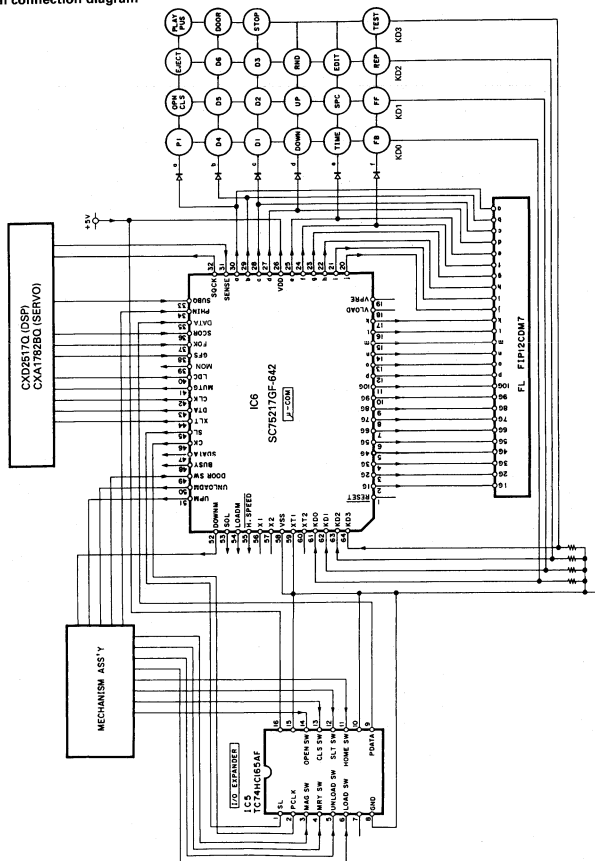
CIRCUIT DESCRIPTION

2-2. Pin functions : SC75217GF-642 (IC6)

Pin No.	Pin name	I/O	Function
1	RESET	–	Reset input port
2 ~ 11	1G ~ 10G	O	FL grid control port
12 ~ 17	p ~ k	O	Not used
18	VLOAD	I	FL driver negative power supply
19	VPRE	I	FL pre-driver power supply
20 ~ 25	j ~ e	O	FL grid control port also used for key-scan
26	VDD	–	+5V power supply
27 ~ 30	d ~ a	O	FL grid control port also used for key-scan
31	SENSE	I	Signal detection port for SENSE signal from signal processor and servo IC
32	SQCK	O	Q-data read clock output port
33	SUBQ	O	Q-data input port
34	PHIN	I	Photo interrupter input port for mechanism (PH1)
35	DATA	I	Data input from TC74HC165AF
36	SCOR	I	Sub-code frame sync detection signal input port
37	FOK	I	Input port of FOK signal from RF amp
38	GFS	I	Input port of frame sync signal
39	MON	O	ON/OFF control output of disc motor
40	LDC	O	Laser ON/OFF signal output
41	MUTG	O	Mute port of signal processor
42	CLK	O	Signal processor and servo IC control out port (CLOCK)
43	DATA	O	Signal processor and servo IC control out port (DATA)
44	XLT	I	Signal processor and servo IC control out port (LATCH)
45	S/L	I	Latch output port of TC74HC165AF
46	CK	O	Clock output port of TC74HC165AF
47	SDATA	I/O	Serial DATA in/out port
48	BUSY	I/O	Serial BUSY in/out port
49	DOORSW	I	Door switch input port of mechanism
50	UNLOADM	O	Control port of unloading motor for mechanism
51	UPM	O	Control port of up motor for mechanism
52	DOWNM	O	Control port of down motor for mechanism
53	SOL	O	Control port of solenoid for mechanism
54	LOADM	O	Control port of loading motor for mechanism (L.M.)
55	H.SPEED	O	High-speed control port (Active L)
56	X1	I	Oscillation input port (4.19MHz)
57	X2	–	NC
58	Vss	–	GND
59	XT1	–	GND
60	XT2	–	NC (Open)
61 ~ 64	KD0 ~ 3	I	Key input port

2-3. Pin functions : TC74HC165AP (IC3)

Pin No.	Pin name	I/O	Function
1	SL	I	Shif load input
2	PCLK	I	Clock input
3	MAGSW	I	Magazine switch (SW4)
4	MRYSW	I	Memory switch (SW3)
5	UNLOADSW	I	Unload switch (SW5)
6	LOADSW	I	Load switch (SW5)
7	–	O	No use
8	GND	–	Ground
9	PDATA	O	Data output
10	–	I	No use
11	HOMESW	I	Home position switch (SW2)
12	SLTSW	I	Start limit switch (SW1)
13	CLSSW	I	Tray close switch (SW6)
14	OPNSW	I	Tray open switch (SW6)
15	–	I	No use
16	Vcc	–	Power supply (+5V)

2-4. TOC data output of serial codes for AI file

When the CD player reads the TOC data of a disc (in the play mode), the following serial codes (16 bits) are output.
- **CD MAX TRACK No. [61XX]**
  Model code 61H
  Function code .... XXH (Max TNO)
- **CD TOTAL TIME (min.) [62XX]**
  Model code 62H
  Function code .... XXH (Total time in min.)
- **CD TOTAL TIME (sec.) [62XX]**
  Model code 63H
  Function code .... XXH (Total time in sec.)

Example

When a disc containing 20 tunes of 65 minutes and 2 seconds in total is played, the following three codes [6120], [6265] and [6302] are output continuously.

CIRCUIT DESCRIPTION

## 3. Servo IC : CXA1782BQ (IC1)

3-1. Block diagram

DP-M87
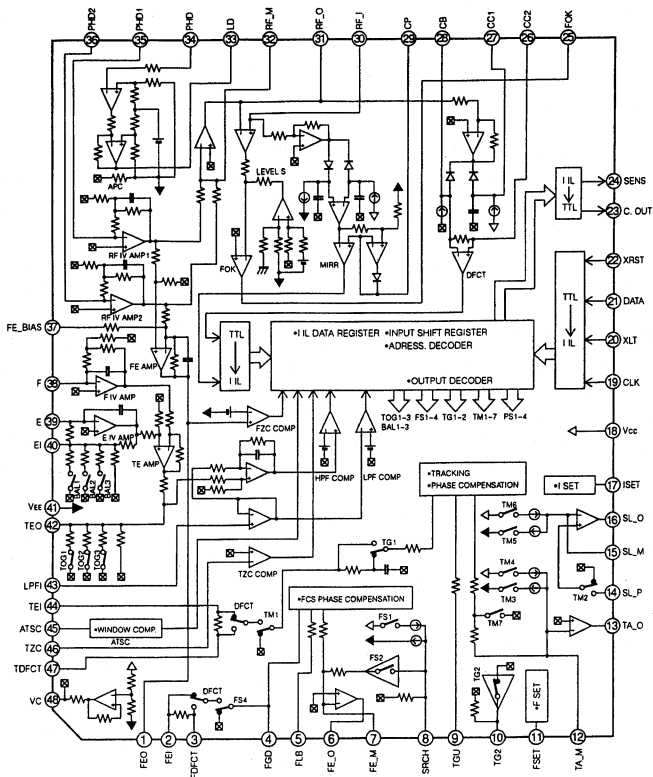
3-2. Pin function

No.	Pin name	I/O	Function
1	FEO	I	Focus error amplifier output. Connected internally to FZC comparator input.
2	FEI	I	Focus error input.
3	FDFCT	I	Capacitor connection pin for detect time constant.
4	FGD	I	Ground this pin through a capacitor when decreasing the focus servo high-frequency gain.
5	FLB	I	External time constant setting pin for increasing the focus servo low-frequency.
6	FE-O	O	Focus drive output.
7	FL-M	I	Focus amplifier negative input pin.
8	SRCH	I	External time constant setting pin for generating focus servo waveform.
9, 10	TGU, TG2	I	External time constant setting pin for switching tracking high-frequency gain.
11	TSET	I	High cut off frequency setting pin for focus and tracking phase compensation amplifier.
12	TA-M	I	Tracking amplifier negative input pin.
13	TA-O	O	Tracking drive output.
14	SL-P	I	Feed amplifier non-inversed input.
15	SL-M	I	Feed amplifier negative input pin.
16	SL-O	O	Feed drive output.
17	ISET	I	Setting pin for focus search, track jump, and feed kick current.
18	Vcc	–	
19	CLK	I	Serial data transfer clock input from CPU (no pull up resistance).
20	XLT	I	Latch input from CPU (no pull up resistance).
21	DATA	I	Serial data input from CPU (no pull up resistance).
22	XRST	I	Reset input; resets at low (no pull up resistance).
23	C.OUT	O	Track number count signal output.
24	SENS	O	Outputs FZC, DFCT, TZC gain, balance and others according to the command from CPU.
25	FOK	O	Focus OK comparator output (DC voltage : 10kΩ load resistance is connected).
26	CC2	I	Input pin for the DEFECT bottom hold output capacitance-coupled.
27	CC1	I	DEFECT bottom hold output.
28	CB	I	Connection pin for DEFECT bottom hold capacitor.
29	CP	I	Connection pin for MIRR hold capacitor. MIRR comparator non-inversed input.
30	RF-I	I	Input pin for the RF summing amplifier output capacitance-coupled.
31	RF-O	O	RF summing amplifier output. Eye pattern check point.
32	RF-M	I	RF summing amplifier inversed input. The RF amplifier gain is determined by the resistance connected between this pin and RFO pin.
33	LD	O	APC amplifier output.
34	PHD	I	APC amplifier input.
35, 36	PHD1, PHD2	I	RF I-V amplifier inversed input. Connect these pins to the photo diode A+C and B+D pins.
37	FE-BIAS	I	Bias adjustment of focus error amplifier.
38, 39	F, E	I	F I-V and E I-V amplifier inversed input. Connect these pins to photo diodes F and E.
40	EI	–	I-V amplifier E gain adjustment (when not using automatic balance adjustment).
41	VEE	–	
42	TEO	O	Tracking error amplifier output. E-F signal is output.
43	LPFI	I	Comparator input for balance adjustment (input from TEO through L.P.F.).
44	TEI	I	Tracking error input.
45	ATSC	I	Window comparator input for ATSC detection.
46	TZC	I	Tracking zero-cross comparator input.
47	TDFCT	I	Capaitor connection pin for defect time constant.
48	VC	O	(Vcc+VEE) / 2 DC voltage output.

CIRCUIT DESCRIPTION

4. Digital Signal Processor : CXD2517Q (IC2)

4-1. Block diagram
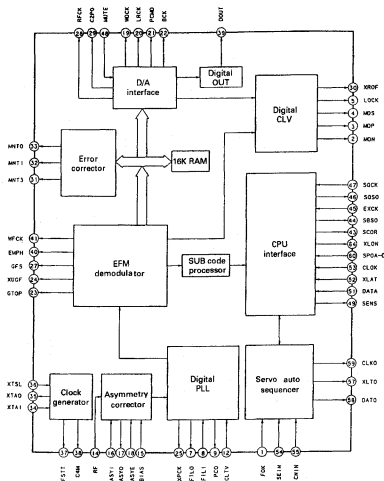
4-2. Pin function

No.	Pin name	I/O	Function
1	FOK	I	Focus OK input. Used for SENS output and the servo auto sequencer.
2	MON	I	1, 0	Disc motor ON/OFF control output.
3, 4	MDP, MDS	O	1, Z, 0	Disc motor servo clock.
5	LOCK	O	1, 0	GFS is sampled at 460Hz; when GFS is high, this pin outputs a high signal.
			If GFS is low eight consecutive samples, this pin outputs low.
6	TEST	I	Test pin (normally GND).
7	FILO	O	Analog	Master PLL (slave=digital PLL) filter output.
8	FILI	I	Master PLL filter input.
9	PCO	O	1, Z, 0	Master PLL charge pump output.
10	Vss	–	–	GND
11	AVss	–	–	GND (analog)
12	CLTV	–	–	Master VCO control voltage input.
13	AVDD	–	–	Analog power supply (+5V).
14	RF	I	EFM signal input.
15	BIAS	I	Constant current input of asymmetry circuit.

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CIRCUIT DESCRIPTION

No.	Pin name	I/O		Function
16	ASYI	I		Asymmetry comparator volatge input.
17	ASYO	O	1, 0	EFM full-swing output (low=Vss, high=VDD).
18	ASYE	I		Low : asymmetrycircuitoff, high : asymmetry circuit on.
19	WDCK	O	1, 0	D/A interface. Word clock f=2Fs.
20	LRCK	O	1, 0	D/A interface. LR clock f=Fs.
21	PCMD	O	1, 0	D/A interface. Serial data (two's complement, MSB first).
22	BCK	O	1, 0	D/A interface. Bit clock.
23	GTOP	O	1, 0	GTOP output.
24	XUGF	O	1, 0	XUGF output.
25	XPCK	O	1, 0	XPLCK output.
26	VDD	–	–	Power supply (+5V).
27	GFS	O	1, 0	GFS output.
28	RFCK	O	1, 0	RFCK output.
29	C2PO	O	1, 0	C2PO output.
30	XROF	O	1, 0	XRAOF output.
31 ~ 33	MNT3, 1, 0	O	1, 0	MNT 3, MNT 1, MNT 0 output.
34	XTAI	I		16.9344MHz crystal oscillation circuit input, or 33.8688MHz input.
35	XTAO	O	1, 0	16.9344MHz crystal oscillation circuit output.
36	XTSL	I		Crystal selection input. Set low when the crystal is 16.9344MHz; high when 33.8688MHz.
37	FSTT	O	1, 0	2/3 frequency divider output for pins 34 and 35.
38	C4M	O	1, 0	4.2336MHz output.
39	DOUT	O	1, 0	Digital-out output.
40	EMPH	O	1, 0	Outputs high signal when the playback disc has emphasis, low signal when no emphasis.
41	WFCK	O	1, 0	WFCK output.
42	Vss	–	–	GND
43	SCOR	O	1, 0	Outputs high signal when either sub code sync S0 or S1 is detected.
44	SBSO	O	1, 0	Sub P to W serial output.
45	EXCK	I		SBSO read-out clock input.
46	SQSO	O	1, 0	Sub Q 80-bit serial output.
47	SQCK	I		SQSO read-out clock input.
48	MUTE	I		High : mute, low : release
49	SENS	O	1, 0	SENS output to CPU.
50	XRST	I		System reset. Reset when low.
51	DATA	I		Serial data input from CPU.
52	XLAT	I		Latch input from CPU. Serial data is latched the falling edge.
53	CLOK	I		Serial data transfer clock input from CPU.
54	SEIN	I		Sense input from SSP.
55	CNIN	I		Track jump count signal input.
56	DATO	O	1, 0	Serial data output to SSP.
57	XLTO	O	1, 0	Serial data latch output to SSP. Latched at the falling edge.
58	VDD	–	–	Power supply (+5V).
59	CLKO	O	1, 0	Serial data transfer clock output to SSP.
60 ~ 63	SPOA ~ SPOD	I		μ-com extended interface (input A ~ D).
64	XLON	O	1, 0	μ-com extended interface (output).

Notes
- PCMD is two's complement output of MSB first.
- GTOP is used to monitor the frame sync protection status.
- XUGF is the negative pulse for the frame sync derived from the EFM signal. It is the signal before sync protection.
- XPLCK is the inverse of EFM PLL clock. The PLL is designed so that the falling edge and the EFM signal transition point coincide.
- GFS goes high when the frame sync and the insertion protection timing match.
- RFCK is derived from the crystal accuracy. This signal has cycle of 136μ.
- C2PO represents the data error status.
- XRAOF is generated when the 16K RAM exceeds the ±4F jitter margin.

ADJUSTMENT

No.	ITEM	INPUT SETTING	OUTPUT SETTING	PLAYER SETTING	ALIGNMENT POINT	ALIGN FOR	FIG.
1	TRACKING ERROR BALANCE	Test disc Type 4	Connect an oscilloscope as follows. CH1: RF (CN3-6) CH2: TE (CN3-1)	Press the P. OPEN/CLOSE key to open the tray. Reset to TEST mode. Then, press the CHECK key. Confirm that the display is "03".	TE BALANCE VR2	Symmetry between upper and lower patterns, or DC=0±0.05V	(a)
2	FOCUS ERROR BALANCE	Test disc Type 4	Connect an oscilloscope as follows. CH1: RF (CN3-6) CH2: TE (CN3-1)	Press the PLAY key. Confirm that the display is "05".	FE BALANCE VR1	Optimum eyepattern Grating is correctly aligned with the RF level of 1.5Vp-p or more and the TE (servo open) level of 1.5Vp-p or more, the pickup is acceptable.	(b)
3	FOCUS GAIN	Test disc Type 4 Apply signal of 1kHz, 0.1Vrms to CN3 pin 4 and 5.	Connect a LPF to CN3 pin 4-5, to which connect an oscilloscope or two AC voltmeters.	Press the PLAY key. Confirm that the display is "05".	FOCUS GAIN VR3	Two VTVMs should read the same value.	(c)
4	TRACKING GAIN	Test disc Type 4 Apply signal of 1.3kHz, 0.1Vrms to CN3 pin 1 and 2.	Connect a LPF to CN3 pin 1-2, to which connect an oscilloscope or two AC voltmeters.	Press the PLAY key. Confirm that the display is "05".	TRACKING GAIN VR4	Two VTVMs should read the same value.	(c)

(NOTE) Type 4 disc : SONY YEDS-18 TEST DISC or equivalent.
LPF: around 47kohms+390pF or so.
Adjustment prcedures are in TEST MODE.

(c)Focus Gain and Tracking Gain Adj.

Focus gain adj.

Tracking gain adj.

RF level Wave-form

CH1 RF signal

←0 (V)

←0 (V)

CH2 TE signal

0.5V   1V   1μs
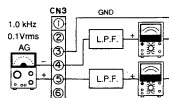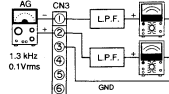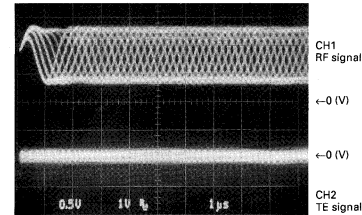
• RF signal and E.Spot signal in test mode (PLAY).

Tracking error balance

CH1 RF signal

←0 (V)

←0 (V)

CH2 TE signal

0.5V   0.5V   2ms
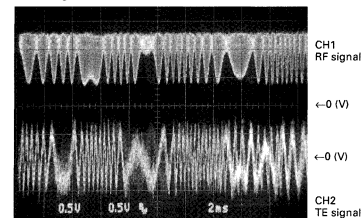
• RF signal and T.Error signal; in test mode (Focusing ON). (Disc type 4)
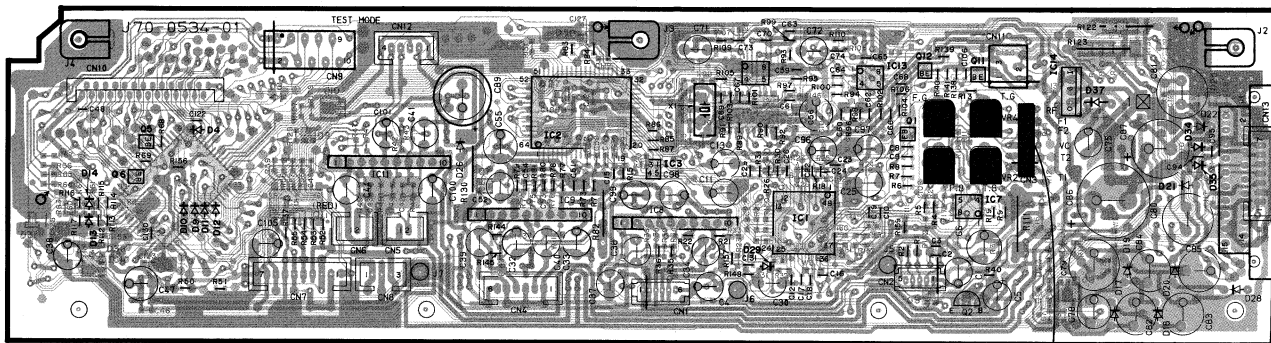• Adjust T.Error so that the waveform is symmetrical above and below 0V (VR2).

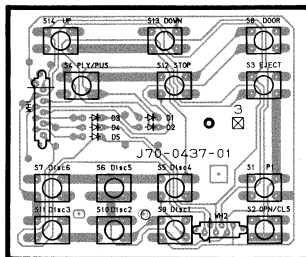**Focus error balance**

RF signal (AC)

0.2V   0.5μs
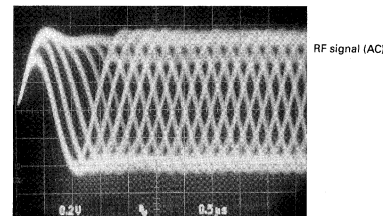
• RF signal in test mode (PLAY).
• Perform the tangential and focusing offset adjustments so that each of the center cross points are focused into one point on the display. The crossing points above and below the center shall also be displayed clearly.
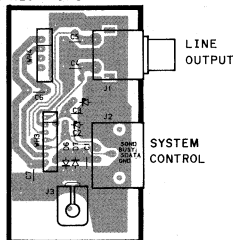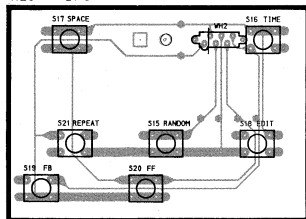
X32-2670-71

J70 0534-01

TEST MODE

CN10

CN8

CN7

CN9

X25-5350-70 A/3

S15 UP	S13 DOWN	S5 DOOR
S4 PLY/PUS	S12 STOP	S3 EJECT
S7 Disc6	S6 Disc5	S5 Disc4	S1 P
S11 Disc3	S10 Disc2	S9 Disc1	S2 OPN/CLS

J70-0437-01

X25- C/3

LINE OUTPUT

SYSTEM CONTROL

X25- B/3

S17 SPACE	S16 TIME
S21 REPEAT	S15 RANDOM	S18 EDIT
S19 FB	S20 FF

(c) Tracking gain : Two VTVMs should read the same value.
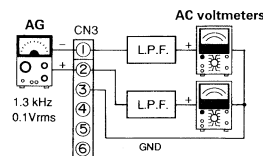
(a) Tracking error balance :
Symmetry between upper and lower patterns or DC=0±0.05V.

(b) Focus error balance : Optimum eye pattern.

AG CN3 AC voltmeters

1.3 kHz
0.1Vrms

L.P.F.

GND

CN3 Oscilloscope

CH2 : TE
CH1 : RF
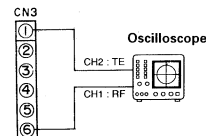
(c) Focus gain : Two VTVMs should read the same value.

CN3 GND

1.0 kHz
0.1Vrms

L.P.F.

AG AC voltmeters

Refer to the schematic diagram for the values of resistors and capacitors.

PARTS LIST

⑥

× New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

Ref. No.	Parts No.	New Parts	Address	Description	Destination marks
84	010-0146-04		1B,3C	NON-WOVEN FABRIC (20X7X3)	S
85	011-0129-04		1A,1D	SOFT TAPE	S
86	J02-1058-15		2D	INSULATOR	
87	J11-0181-03		2D	CLAMPER	
88	J11-0184-12		3A	HOLDER	
89	J19-3485-11		3A	HOLDER (MAGAZINE)	
90	J19-3487-02		2B	MOUNTING HARDWARE	
91	J19-3489-12		2A	RAIL ASSY	
92	J21-5992-04		1C	RAIL	
93	J90-0686-24		2C	TRAY	
94	390-0688-13		3D		
95	J99-0517-02		3A	BINDING HEAD TAPTITE SCREW	
F	N89-2608-46		2C	BINDING HEAD TAPTITE SCREW	
J	N09-2795-05		1A	MACHINE SCREW (2.6X10,12P)	
K	N09-2913-05		3B	MACHINE SCREW	
L	N09-2914-05			MACHINE SCREW	
M	N19-0366-04			FLAT WASHER	
N	N19-1091-04		2C	FLAT WASHER	
O	N19-1105-04		2A	FLAT WASHER	
P	N19-1318-04		2B	FLAT WASHER	
Q	N89-2625-44		2D	PAN HEAD MACHIN SCREW	
R	N89-2606-46		3A	PAN HEAD TAPTITE SCREW	
S	S33-1022-05		3A	LEVER SWITCH (PICKUP LIMIT)	
T	S33-1022-05		1A	LEVER SWITCH (OPEN/CLOSE)	
U	S33-2061-05		3B	LEVER SWITCH (069R)	
V	T42-0597-05		2C	DC MOTOR (FEED MOTOR)	
W	T50-1055-04		2D	YOKE	
X	A11-0791-03		2B	SUB CHASSIS ASSY (DISC MOTOR)	
SW1	T42-0612-04		1E	MOTOR ASSY (FEED MOTOR)	
SW6					
SW7					
97	N89-2606-46		3A	PAN HEAD TAPTITE SCREW	
98	T25-1055-04		1G		
99	T42-0567-05		1G		
PM	T42-0567-05		2H		
VM	194-0227-18		1A	MAGNETIC PLUNGER (069R)	

MECHANISM ASSY SINGAPORE MADE (X92-1839-51)

	N19-0366-04		3A	SUB CHASSIS (LOADING)	
	N83-2008-46		1G	SUB CHASSIS (LEFT)	
	N19-0091-04		2H	SUB CHASSIS (RIGHT)	
	N19-1318-04		2H	SUB CHASSIS (LOADING)	
	A11-0752-02		1E	MOTOR ASSY (LOADING MOTOR)	
	A11-0793-03		1E	MOTOR ASSY (FEED MOTOR)	
	A11-0765-04				
114	010-3105-13		3E	SLIDER	S

⑤

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Ref. No.	Parts No.	New Parts	Address	Description	Destination marks
19	D10-3262-04		1B	SLIDER (069R)	
20	D10-3263-03		1C	SLIDER (LOADING)	
21	D10-3265-04		1B		
22	D10-3266-03		2D	ARM	
23				ARM (069R)	
24	D10-3267-03		2D	ARM (LOADING)	
25	D10-3268-13		2C,2D	SLIDER	
26	D10-3271-04		2D	ARM ASSY	
27	D10-3273-03		2D	ARM ASSY	
28			2D	ARM ASSY	
33	D10-3274-05		3C	ARM (EJECT)	
34	D10-3276-03		2A	ARM (LOCK)	
35	D10-3277-03		2A	ARM ASSY	
36	D10-3278-03		2A	ARM ASSY	
38	D10-3294-14		3B	RQ0 (PICKUP)	
43	D13-3263-04		2B	GEAR	
44	D13-0986-04		2B	GEAR	
45	D13-3273-04		1B	GEAR	
46	D13-0992-04		2C	GEAR (PLANET)	
47	D13-0987-04		2B,2C	GEAR (CARRIER)	
48	D13-0989-04		2A	GEAR (INTERMEDIATE)	
49	D13-0994-04		2B	GEAR (IDLE)	
50	D13-0991-04		2C	GEAR (WORM)	
51	D13-0992-04		1B	GEAR	
52	D13-0993-04		3B	GEAR	
53	D13-0994-04		3B	GEAR (INTERMEDIATE)	
54	D13-0995-04		2B	GEAR (ARM)	
55	D13-0996-04		2C	GEAR	
56	D13-1902-04		2A	WORM	
57	D21-1633-05		3A	SHAFT	
60	E35-0388-05		1B	WIRING HARNESS (LEVER SWITCH)	
61	E35-0390-05		2A	WIRING HARNESS (LOADING MOTOR)	
62	E35-0391-05		1B	WIRING HARNESS (VERTICAL DISC MOTOR)	
63	E35-0392-05		1B	WIRING HARNESS (VERTICAL MOTOR)	
64	E35-0417-05		2C	WIRING HARNESS (069R)	
65	E35-0418-05		3A	WIRING HARNESS (6P)	
66	E35-0435-08		1A	WIRING HARNESS (SWITCH)	
70	G01-2617-04		3A	EXTENSION SPRING	
71	G01-2634-13		2A,1B	EXTENSION SPRING	
72	G01-2990-04		1A	TORSION COIL SPRING	
73	G01-3470-08		1A	EXTENSION SPRING (ARM LOCK)	
74	G01-3471-08		1B	EXTENSION SPRING (VERTICAL LOCK)	
75	G01-3473-04		2C	COMPRESSION SPRING	
76	G01-3474-04		1C	EXTENSION SPRING	
77	G01-3475-04		1B	EXTENSION SPRING	
78	G01-3477-04		1A	EXTENSION SPRING	
79	G01-3480-04		1B	COMPRESSION SPRING	
80	G01-3481-08		2A	COMPRESSION SPRING	
82	G01-3518-04		2B	COMPRESSION SPRING	
83	G02-1102-04		2B	FLAT SPRING	

⑧

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Ref. No.	Parts No.	New Parts	Address	Description	Destination marks
181	G01-3485-04		2G	COMPRESSION SPRING	S
183	G03-1918-04		3H	COMPRESSION SPRING	S
184	G02-1018-04		2F	FLAT WASHER	S
185	010-0192-04		1F,3G	NON-WOVEN FABRIC (20X7X3)	S
	010-0192-04		1E,1H	SOFT TAPE	S
186	J02-1058-15		2G	NON-WOVEN FABRIC (110X20)	
187	J19-3485-11		3H	INSULATOR	
188	J19-3564-22		3E	HOLDER ASSY	
189	J19-3564-11		3B	HOLDER	
191	J19-3567-02		1G	HOLDER (MAGAZINE)	
192	J19-3568-12		1G	MOUNTING HARDWARE	
193	J21-5992-04		2G	RAIL ASSY	
194	390-0686-24		2C	RAIL	
195	390-0688-13		3H	GUIDE	
	J99-0517-02		2H	RAIL ASSY	
F	N89-2608-46		1F	MOUNTING HARDWARE	
J	N09-2795-05		3E	BINDING HEAD TAPTITE SCREW	
K	N09-2913-05		3E	MACHINE SCREW	
L	N09-2914-05			MACHINE SCREW (2.6X10,12P)	
M				MACHINE SCREW	
N				MACHINE SCREW	
O	N19-0366-04		3E	FLAT WASHER	
P	N19-0091-04		1E	FLAT WASHER	
Q	N19-1318-04			FLAT WASHER	
R	N38-2625-46			PAN HEAD MACHIN SCREW	
S	N89-2606-46			BINDING HEAD MACHIN SCREW	
T	S33-1022-05			LEVER SWITCH (PICKUP LIMIT)	
U	S33-1022-05			LEVER SWITCH (OPEN/CLOSE)	
V	S33-2061-05			LEVER SWITCH (069R)	
W					
X	T42-0597-05		2G	DC MOTOR (FEED MOTOR)	
SW1	T50-1055-04		2H		
SW7					
197	N89-2606-46		2H	PAN HEAD TAPTITE SCREW	
198	T42-0620-05		2F	SUB CHASSIS ASSY (DISC MOTOR)	
199	T99-0559-03		1F	OPTICAL PICKUP HEAD (HPC-2S)	
200	T99-0559-03		3E	MOTOR ASSY (LOADING MOTOR)	
LM	T42-0620-05		3E	OPTICAL PICKUP HEAD (HPC-2S)	
PU	T42-0023-05		1E	DC MOTOR (VERTICAL,065E)	
VM	194-0227-18		1E	MAGNETIC PLUNGER (069R)	

⑦

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Ref. No.	Parts No.	New Parts	Address	Description	Destination marks
115	D10-3257-03		2F	SLIDER	
116	D10-3339-03		1F	ARM (LOADING)	
117	D10-3340-02		1F	SLIDER (LEFT)	
119	D10-3262-04		1F	SLIDER (069R)	
120	D10-3341-03		1F	SLIDER	
121	D10-3342-03		2F	ARM (LOADING)	
122	D10-3343-03		3E	ARM	
123	D10-3344-03		3E	ARM (069R)	
124				ARM (LOADING)	
125	D10-3268-13		2F	SLIDER (EJECT)	
130	D10-3269-04		1G,1H	ARM (LOCK)	
131	D10-3270-03		3E	ARM ASSY	
132	D10-3271-04		3E	ARM ASSY	
133	D10-3278-03		3G	ARM	
134	D10-3275-04		2E	RQ0 (PICKUP)	
138	D10-3294-14		3F		
143	D13-0983-04		3F	GEAR	
144	D13-0986-04		2F	GEAR	
145	D13-3273-04		1F	GEAR	
146	D13-0985-04		2F,2G	GEAR (PLANET)	
147	D13-0987-04		2G	GEAR (CARRIER)	
148	D13-0989-04		2F	GEAR (INTERMEDIATE)	
150	D13-0994-04		2F	GEAR (IDLE)	
151	D13-0995-04		1F	GEAR (ARM)	
152	D13-0996-04		1E	GEAR (WORM)	
153	D13-1318-04		1E,1F	GEAR	
154	D21-1633-05		3A	SHAFT	
155	E35-0388-05		2C	WIRING HARNESS (LEVER SWITCH)	
156	E35-0390-05		1F	WIRING HARNESS (LOADING MOTOR)	
157	E35-0392-05		1F	WIRING HARNESS (VERTICAL DISC MOTOR)	
161	G01-2617-04		3F	WIRING HARNESS (SWITCH)	
162	G01-2634-13		2E	CUSHION	
163	G01-3470-08		1F	EXTENSION SPRING (ARM LOCK)	
164	G01-3471-08		1E	TORSION COIL SPRING	
165				EXTENSION SPRING (VERTICAL LOCK)	
166	G01-3473-04		2F	COMPRESSION SPRING	
169	G01-3474-04		1F	EXTENSION SPRING	
171	G01-3475-04		1F	EXTENSION SPRING	
172	G01-3477-04		1E	EXTENSION SPRING	
173	G01-3480-04		1F	COMPRESSION SPRING	
174	G01-3481-08		1E	EXTENSION SPRING (ARM LOCK)	
179	G01-3473-04		1F	COMPRESSION SPRING	
180				EXTENSION SPRING	

L: Scandinavia　K: USA　P: Canada　R: Mexico　G: Germany　S-SINGAPORE made
Y: PX (Far East, Hawaii)　T: England　E: Europe
Y: AAFES (Europa)　X: Australia　M: Other Areas
⚠ indicates safety critical components.

DP-M87   DP-M87

PARTS LIST

CAPACITORS
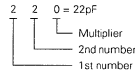
```
CC  45  TH  1H  220  J
 1   2   3   4    5   6
```

1 = Type ... ceramic, electrolytic, etc.
2 = Shape ... round, square, ect.
3 = Temp. coefficient
4 = Voltage rating
5 = Value
6 = Tolerance

CC45   Color*

• Capacitor value
010 = 1pF
100 = 10pF
101 = 100pF
102 = 1000pF = 0.001μF
103 = 0.01μF

```
2   2   0 = 22pF
            Multiplier
            2nd number
            1st number
```

• Temperature coefficient

1st Word	C	L	P	R	S	T.	U		2nd Word	G	H	J	K	L
Color*	Black	Red	Orange	Yellow	Green	Blue	Violet		ppm/°C	±30	±60	±120	±250	±500
ppm/°C	0	−80	−150	−220	−330	−470	−750		Example : CC45TH = −470 ± 60ppm/°C					

• Tolerance (More than 10pF)

Code	C	D	G	J	K	M	X	Z	P	No code
(%)	±0.25	±0.5	±2	±5	±10	±20	+40 −20	+80 −20	+100 −0	More than 10μF − 10 ~ +50 Less than 4.7μF −10 ~ +75

(Less than 10pF)

Code	B	C	D	F	G
(pF)	±0.1	±0.25	±0.5	±1	±2

• Voltage rating

2nd word / 1st word	A	B	C	D	E	F	G	H	J	K	V
0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	–
1	10	12.5	16	20	25	31.5	40	50	63	80	35
2	100	125	160	200	250	315	400	500	630	800	–
3	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	–

• Chip capacitors

```
(EX)  C C 7 3 F S L 1 H 0 0 0 J
       1 2 3 4 5 6 7
```
Refer to the table above.
1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Voltage rating
6 = Value
7 = Tolerance

(Chip) (CH, RH, UJ, SL)

```
(EX)  C K 7 3 F F 1 H 0 0 0 Z
       1 2 3 4 5 6 7
```

(Chip) (B, F)

Dimension (Chip capacitors)

Dimension code	L	W	T
Empty	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
A	4.5 ± 0.5	3.2 ± 0.4	Less than 2.0
B	4.5 ± 0.5	2.0 ± 0.3	Less than 2.0
C	4.5 ± 0.5	1.25 ± 0.2	Less than 1.25
D	3.2 ± 0.4	2.5 ± 0.3	Less than 1.5
E	3.2 ± 0.2	1.6 ± 0.2	Less than 1.25
F	2.0 ± 0.3	1.25 ± 0.2	Less than 1.25
G	1.6 ± 0.2	0.8 ± 0.2	Less than 1.0

RESISTORS

• Chip resistor (Carbon)

```
(EX)  R K 7 3 E B 2 B 0 0 0 J
       1 2 3 4 5 6 7
```

(Chip) (B,F)

Dimension

• Carbon resistor (Normal type)

```
(EX)  R D 1 4 B B 2 C 0 0 0 J
       1 2 3 4 5 6 7
```

1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Rating wattage
6 = Value
7 = Tolerance
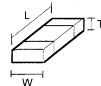
Dimension (Chip resistor)

Dimension code	L	W	T
E	3.2 ± 0.2	1.6 ± 0.2	1.0
F	2.0 ± 0.3	1.25 ± 0.2	1.0
G	1.6±0.2	0.8±0.2	0.5±0.1

Rating wattage

Code	Wattage	Code	Wattage	Code	Wattage
1J	1/16W	2C	1/6W	3A	1W
2A	1/10W	2E	1/4W	3D	2W
2B	1/8W	2H	1/2W		

SPECIFICATIONS

Format
System ....Compact disc digital audio system
Laser ....Semiconductor laser
Number of channels ....2 channels
Playing rotation ....200rpm ~ 500rpm (CLV)

D/A Convertors
D/A conversion .... 1 Bit
Oversampling 8fs (352.8kHz)

Audio
Frequency response ....20Hz ~ 20kHz, ±1.0dB
Signal to noise ratio ....More than 96dB

Dynamic range ....More than 90dB
Total harmonic distortion ....Less than 0.005%
Channel separation ....More than 90dB
Wow & Flutter ....Unmeasurable limit
Output level/impedance
  Fixed ....2V / 1kΩ

General
Dimensions ....W : 360mm
                                                   H : 90mm
                                                   D : 353mm
Weight (net) 4.1kg

Note : KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Note :
Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the General Market (M) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

1994-2/1994-3 (N) 2083

DP-M87   DP-M87

EXPLODED VIEW (UNIT)

A :N89-3008-45
B :N89-3008-46

P.OPEN / CLOSE
| S2 |

| | 1 | 2 | 3 |
| S9 | S10 | S11 |

| S1 |
| S5 | S6 | S7 |

M.EJECT
| S3 | S12 | S4 |

DOOR
| S8 | S13 | S14 |

SPACE
| S17 |

TIME
| S16 |

REPEAT
| S21 |

RANDOM
| S15 |

EDIT MODE
| S18 |

| S19 | S20 |

(X25-5350-70): JAPAN MADE
(A/3)

(X25-5440-70): SINGAPORE MADE
(A/3)

WH4

J2
SYSTEM CONTROL

J1
LINE OUTPUT

DP-M87

Parts with the exploded numbers larger than 700 are not supplied.

DP-M87

PARTS LIST

❷

Ref. No. 参照番号	Address 位置番号	New Panel 新貼付	Parts No. 部 品 番 号	Description 品 名 / 規 格		Desti-nation marks 向 地 別	Re-marks 備考

CONTROL UNIT X32-2760-71~J, X32-2740-71 : S

D1 ~7 | | | 1SS133 | D100E | |
C1 | | | CB04KW1A70M | ELECTRO | 47UF | 10W |
C2 | ,3 | | CC73FSL1H150J | CHIP C | 15PF | J |
C4 | | | CB04KW1Y100M | ELECTRO | 10UF | 35W |
C5 | | | CB04KW1V330M | ELECTRO | 33UF | 6.3W |
C6 | | | CB04KW0Z331M | ELECTRO | 330UF | |
C8 | | | CC73FSL1H220J | CHIP C | 22PF | J |
C9 | | | CC73FBL1H180J | CHIP C | 18PF | J |
C10 | | | CB04KW1H47M | CHIP C | 0.015UF | K |
C11 | | | CK73FBJ1H474Z | CHIP C | 0.470UF | |
C12 | | | CK73FBJ1H333K | CHIP C | 0.033UF | K |
C13 | | | CB04KW1H010M | CHIP C | 1.0UF | |
C14 | | | CK73FBJ1H103K | CHIP C | 0.010UF | K |
C15 | | | CK73FBJ1H221K | CHIP C | 220PF | K |
C16 | | | CK73FBJ1H221K | CHIP C | 220PF | K |
C17 | | | CK73FBJ1H103K | CHIP C | 0.010UF | K |
C18 | ,23 | | CK73FBJ1H333K | CHIP C | 0.033UF | K |
C20 | | | CK73FBH1H222K | CHIP C | 2200PF | K |
C21 | | | CK73FBH1H222K | CHIP C | 2200PF | K |
C24 | | | CK73FBJ1E474Z | CHIP C | 0.470UF | K |
C25 | | | CB04WE100M | CHIP C | 10UF | 25W |
C27 | | | CK73FBH1H333K | CHIP C | 0.033UF | K |
C29 | ,33 | | CK73FBJ1H121J | CHIP C | 120PF | J |
C30 | | | CB04KW1B100M | CHIP C | 10UF | |
C31 | | | CK73FBJ1E103K | CHIP C | 0.010UF | K |
C32 | | | CB04KW1H010M | CHIP C | 1.0UF | 16W |
C34 | ,35 | | CK73FBJ1H121J | CHIP C | 120PF | J |
C36 | | | CB04KW1H292M | CHIP C | 2.9UF | |
C40 | ,41 | | CB04WE100M | CHIP C | 10UF | 25W |
C42 | ,43 | | CK73FBH1H103K | CHIP C | 0.010UF | K |
C44 | | | CB04HW1H100M | CHIP C | 1001UF | |
C46 | | | CK73FBH1H221K | CHIP C | 220PF | J |
C47 | | | CB04KW0Z221M | CHIP C | 220UF | 6.3W |
C48 | | | CB04KW0Z221M | CHIP C | 220UF | |
C49 | | | CK73FBH1H152K | CHIP C | 1500PF | K |
C50 | | | CK73FBH1H472K | CHIP C | | |
C52 | | | CK73FBH1H473K | CHIP C | 0.047UF | K |
C53 | | | CB04KW1A220M | CHIP C | 22UF | |
C54 | | | CB04KW0Z331M | CHIP C | 330UF | |
C55 | | | CB04KW0Z221M | CHIP C | 220UF | |
C56 | ,58 | | CB04KW0Z471M | ELECTRO | 470UF | |
C57 | ,59 | | CC73FSL1H470J | CHIP C | 47PF | J |
C65 | | | CC73FSL1H121J | CHIP C | 120PF | J |
C66 | ,67 | | CK73FBH1H103K | CHIP C | 0.010UF | K |
C68 | ,69 | | CK73FSL1H681J | CHIP C | 680PF | J |

❹

Ref. No. 参照番号	Address 位置番号	New Panel 新貼付	Parts No. 部 品 番 号	Description 品 名 / 規 格		Desti-nation marks 向 地 別	Re-marks 備考

D25 | 3C | | DA204U | D100E | |
D26 | | | S66B0B(TPBS) | D100E | |
D27 | | | 1SR139-100(T&4) | D100E | |
D28 | 1B | | S66B0B(TPBS) | D100E | |
D29 | | | DA204U | D100E | |
D30 | ,31 | | 1SR139-100(T&4) | D100E | |
D34 | | | DA204U | D100E | |
D35 | ,35 | | 1SR139-100(T&4) | D100E | |
D36 | | | DA204U | D100E | |
D37 | | | DTZ21.1B) | D100E | |
IC2 | | | MA110 | | |
IC3 | 1B | | LA6510 | IC(DUAL POWER 9P AMP) | |
IC4 | | | T1A41OAK-A4 | IC(VOLTAGE DETECTOR) | |
IC5 | | | S-80740AL-A4 | IC(V1/VOLTAGE REGULATOR / +5V) | |
IC6 | | | LA6510 | IC(8BIT SHIFT REGISTER) | |
IC7 | | | T1A41OAK | IC(6P AMPLIFIER) | |
IC8 | ,9 | 2D | | DTC124EU | IC(DUAL POWER 9P AMP) | |
IC9 | | | NJM2100M | IC(DUAL POWER 9P AMP) | |
IC10 | 2J | | NJM4558M | IC(2CH NAND GATE) | |
IC11 | 3B | | S66B0B(TPBS) | IC(DIGITAL FILTER) | |
IC12 | ,13 | 1A | | DTA124EU | IC(DIGITAL SIGNAL PROCESSOR) | |
Q1 | ,4 | 3E | | DTC124EU | DIGITAL TRANSISTOR | |
Q5 | | 3A | | 2SC4081(R,S) | DIGITAL TRANSISTOR | |
Q6 | ,6 | 2B | | DTA124EU | DIGITAL TRANSISTOR | |
Q7 | | 2B | | DTA130B(G,H) | DIGITAL TRANSISTOR | |
Q8 | | 1B | | 2SD1963(R,S) | DIGITAL TRANSISTOR | |
Q9 | ,10 | | 2SC4081(R,S) | TRANSISTOR | |
Q11 | | 3A | | 2SA1576(R,S) | TRANSISTOR | |
Q12 | | 1B | | A11-0746-04 | TRANSISTOR | |
Q13 | | 2B | | A11-0763-04 | TRANSISTOR | |

MECHANISM ASSY JAPAN MADE (X92-1749-51)

	3C		D10-3105-02	CHASSIS ASSY	
	1		A11-0742-01	SUB CHASSIS (LEFT)	
	2		A11-0745-01	SUB CHASSIS CALKING ASSY	
	3		A11-0746-04	SUB CHASSIS CALKING ASSY	
	4		A11-0750-02	SUB CHASSIS CALKING ASSY	
	3A		D10-0752-02	SLIDER	
	14		A11-0763-04	ARM (LOADING)	
	3B		A11-0765-04	ARM (LOADING)	
	3A		D10-3105-13	SLIDER	
	11		D10-3169-03	CHASSIS CALKING ASSY	
	16		D10-3256-03	SUB CHASSIS CALKING ASSY	
	18		D10-3261-13	SUB CHASSIS CALKING ASSY	

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Y: AAFES (Europe)   X: Australia   M: Other Areas

△ indicates safety critical components

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DP-M87

Ref. No.	Address	New Panel	Parts No.	Description		Desti-nation marks	Re-marks

601 | 1J | | A01-3079-11 | METALLIC CABINET | | X |
602 | 4L | | A29-0351-02 | SUB PANEL | | X |
603 | 3J | | A29-0351-02 | PANEL (TRAY) | | TB |
604 | 1J | | A60-0447-12 | PANEL (PANEL) | |
610 | 2J | | B07-2249-03 | ESCUTCHEON | |
611 | | | B44-0096-43 | FRONT GLASS | |
		B44-0310-03	WARRANTY CARD	
		B44-0310-93	WARRANTY CARD	
		B54-0109-24	CAUTION CARD	
615	2J		E35-0435-00	WIRING HARNESS	
620			F07-0719-13	COVER	M
625	3J		G01-3604-14	TENSION COIL SPRING	XB
626			H10-0173-04	NON-WOVEN FABRIC (40X0X2)	T
627	2J		H10-5545-02	POLYSTYRENE FRAMED FIXTURE	XE
628	3J		H10-5546-02	POLYSTYRENE FRAMED FIXTURE	N
		H10-5547-02	POLYSTYRENE FRAMED FIXTURE	
		H20-0564-04	POLYSTYRENE COVER	
633	3L		H25-0384-04	PROTECTION BAG	
634	3K		H25-0658-04	PROTECTION CARTON CASE	
635	1L		H25-0418-04	ITEM CARTON CASE	
		H50-0718-04	ITEM CARTON CASE	
		H50-0081-04	CUSHION	
DB1	2J		F1P1020M7	FOOT	
		J09-0366-15	MAGAZINE (CDM-600)	
		J19-3394-13	INDICATOR TUBE	
		J61-0307-05		

ELECTRIC UNIT X25-4900-00 : J, X25-5330-20 : S

660 | 1B,1F | | E35-0389-05 | WIRING HARNESS (9P) | J |
660 | 1B,1F | | E35-0389-05 | WIRING HARNESS (9P) | |
SW2 | 1B,1F | | SK4-0006-05 | LEVER SWITCH (HOME POSITION) | |
SW3,4 | | | S68-0025-05 | LEVER SWITCH (LOADING POSITION) | |
| | | S68-0025-05 | PUSH SWITCH (MEMORY, MAGAZINE) | |
PH1 | 1B,1F | | T95-0123-05 | 9PTN ISOLATOR(LIFT POSITION) | |

DISPLAY UNIT X25-5350-70 : J, X25-5440-70 : S

C1 | | | CK45PF1H103Z | CERAMIC | 0.010UF | |
C2 | 3 | | CC44PSL1H221J | CERAMIC | 220PF | |
C3 | ,5 | | CK45PF1H103Z | CERAMIC | 0.010UF | |
C6 | | | CK45PF1H103Z | CERAMIC | 0.010UF | |
C7 | | | CK45PF1H473Z | CERAMIC | 0.047UF | |
J1 | | | E63-0648-15 | PHONO JACK (LINE OUT) | |
J2 | ,3 | | E30-2631-15 | 6P RECEPTACLE(S,CONT) | |
| | | E30-2631-15 | C6RP WITH CONNECTOR | |
S1 | ~21 | | S40-1064-05 | TACT SWITCH (PL,OPEN/CLOSE etc) | |
D1 | ~7 | | D1E1608 | | |
| | | HSS104 | | |

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Y: AAFES (Europe)   X: Australia   M: Other Areas

J=JAPAN made, S=SINGAPORE made

△ indicates safety critical components

❸

Ref. No.	Address	New Panel	Parts No.	Description		Desti-nation marks	Re-marks

C70 | ,72 | | CK73FBJ1H103K | CHIP C | 0.010UF | |
C73 | ,74 | | CK73FBJ1H103K | CHIP C | 0.010UF | |
C75 | | | CB04KW1H010M | CHIP C | 100PF | 25W |
C77 | | | CB04KW1A470M | CHIP C | 47UF | 10W |
C78 | | | CK73FBJ1H103K | CHIP C | 0.010UF | |
C80 | ,81 | | CB04KW1A470M | ELECTRO | 47UF | 35W |
C82 | ,85 | | CB04KW1V221M | ELECTRO | 220UF | 35W |
C86 | | | CB04KW1V221M | NP-ELEC | 220UF | 25W |
C87 | | | CB04KW1V221M | ELECTRO | 220UF | 25W |
C88 | | | CB04KW1V471M | ELECTRO | 470UF | 35W |
C89 | ,90 | | CK73FBJ1H221J | CHIP C | 220PF | |
C91 | | | CK73FBH1H101J | CHIP C | 100PF | 16W |
C92 | ,93 | | CK73FBH1H271J | CHIP C | 270PF | |
C94 | ,95 | | CB04KW1VA70M | ELECTRO | 4.7UF | 10W |
C96 | | | CB04KW1A101M | ELECTRO | 2/0.047UF | 14W |
C97 | | | CB04KW1M470M | ELECTRO | 220UF | 35W |
C102 | ,101 | | CB04KW1A470M | ELECTRO | 1000UF | |
C103,104 | | | CK73FBH1H103K | CHIP C | 0.010UF | K |
C105 | | | CK73FBH1H103K | CHIP C | 0.010UF | K |
C106,109 | | | CK73FBH1H103K | CHIP C | 0.010UF | K |
C111 | | | CK73FBH1H103K | CHIP C | 0.010UF | K |
C113 | | | CK73FBH1H103K | CHIP C | 0.010UF | K |
C118,120 | | | CK73FBH1H103K | CHIP C | 0.010UF | |
C119,128 | | | CK73FBH1H103K | CHIP C | 0.010UF | |
C130,131 | | | CK73FBH1H103K | CHIP C | 0.010UF | |
J5 | ~7 | | J11-0098-05 | WIRE CLAMPER | |
L1 | | | L33-0369-05 | CHOKE COIL | |
XL1 | | | L77-1164-05 | MINI-FILTER(16, 934AMHZ) | |
R81 | | | RS14K830301J | RS 4.7 | 2W |
R82 | | | RS14K830301J | RS 3.9 | 2W |
R122,123 | | | RS14K830101J | RS 3.9 | 1/2W |
VR1 | | | R12-1659-05 | TRIMMING PGT.(100K) | |
VR2 | | | R12-3685-05 | TRIMMING PGT.(10K) | |
VR3 | ,4 | | R92-0679-05 | TRIMMING PGT.(0 OHM) | |
W10 | ,32 | | R92-0679-05 | 0.9 OHM | |
| | | MA110 | D100E | |
| | | 1SS355 | D100E | |
D1 | ~3 | | DTZ6.2(B) | ZENER D100E | |
D4 | | | DA204U | ZENER D100E | |
D5 | ~14 | | MA110 | ZENER D100E | |
D15 | ,19 | | 1SS355 | ZENER D100E | |
D16 | ,18 | | S66B0B(TPBS) | ZENER D100E | |
D17 | ,22 | | 1SR139-100(T&4) | ZENER D100E | |
D23 | ,24 | | DTZ10(B) | ZENER D100E | |

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△ indicates safety critical components

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※ New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

TC74HC165AF   LM2940CT-5.0   CXD2517Q   SC75217GF-642   CXA1782BQ   TC9268F   S-80740AL-A4   TC7S04F

LM2940CT-5.0
OUTPUT
GND
INPUT (Case)

FOCUS COIL DRIVER
TRACKING COIL DRIVER
IC8 (1/2)
IC8 (2/2)

I/O EXPANDER
IC5
IC10
RESET

IC1
EFM COMPARATOR SERVO IC

IC6 (Bottom View)
μ-COM

IC2
DIGITAL SIGNAL PROCESSOR

IC3

D/A CONVERTER
IC4

IC12 (1/2)
IC12 (2/2)
L.P.F

IC13 (1/2)
IC13 (2/2)
L.P.F

IC14
+5V AVR

IC7 (2/2)
IC7 (1/2)

DOOR DRI

(X25-5350-70), (X25-5440-70) (A/3)
OPN/CLS   EJECT
CN9
TEST
CN10
CN12

+B LINE
−B LINE

• DC voltages are as measured with a high impedance voltmet or/and units.

CAUTION : For continued safety, replace safety critical co list). ⚠ Indicates safety critical components. To reduce the risk out (exposed parts are acceptably insulated from the supply cir

Component list (top right):

(X32-)			
IC1	: CXA1782BQ	D1-3,9~14,36	: 1SS355 or MA110
IC2	: CXD2517Q	D4,34,35	: DTZ5.1(B)
IC3	: TC7S04F	D5	: DAN202U
IC4	: TC9268F	D15	: DTZ6.2(B)
IC5	: TC74HC165AF	D16,23,24	: DTZ10(B)
IC6	: SC7521ZGF-642	D17~22,26,28,37	: S5686B(TP85) or 1SR139-100(T64)
IC8,9,11	: TA8410AK or LA6510	D25,27,30,31	: DA204U
IC10	: S-80740AL-A4	D29	: DTZ3.9(B)
IC12,13	: NJM4565M	D1-7	: DTZ3.9(B)
IC14	: LM2940CT-5.0	ED1	: FIP12CDM7 or TA7900SS
Q1,3,4	: DTC124EU		
Q5,6,11,15	: 2SC4081(R,S)		
Q7,9,13	: DTA124EU		
Q8	: 2SB1308(Q,R)	(X25-)	
Q10	: 2SD1963(R,S)		: HSS104 or 1SS133
Q12	: 2SA1576(R,S)		

PRODUCT.P.	MECHANISM ASS'Y	ELECTRIC ASS'Y	CD PLAYER UNIT	DISPLAY UNIT
JAPAN MADE	X9J-1749-51 CDM-2315(G,)	X25-4900-00	X32-2670-71	X25-5350-70
SINGAPORE MADE	X9J-1659-51 CDM-2315(GS	X25-9330-20	X32-2740-71	X25-5440-70

+B LINE
−B LINE

────── SIGNAL LINE
────── GND LINE

DOOR DRIVER
D/A CONVERTER
30A AVR
+5V AVR
L.P.F
BUSY
S DATA

IC6 (Bottom View) μ-COM

S-80740AL-A4   TC7S04F

• DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

CAUTION : For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

This schematic diagram is available of changing information from serial No. 31240001.

DP-M87 (M)

DP-M87
KENWOOD

Y22-3360-21

F	: N89-2608-46	N	: N19-0366-04	S : N39-2025-46
J	: N09-2769-05	O	: N19-0891-04	T : N83-2008-46
K	: N09-2817-05	P	: N19-1105-04	U : N86-2008-46
L	: N09-2913-05	Q	: N19-1318-04	V : N89-2006-46
M	: N09-2914-05	R	: N38-2625-46	W : N89-2606-45
				X : N89-2606-46

Parts with the exploded numbers larger than 700 are not supplied.

F	: N89-2608-46	N	: N19-0366-04	S	: N39-2025-46
J	: N09-2769-05	O	: N19-0891-04	T	: N83-2008-46
K	: N09-2817-05	P	: N19-1105-04	U	: N86-2008-46
L	: N09-2913-05	Q	: N19-1318-04	V	: N89-2006-46
M	: N09-2914-05	R	: N38-2625-46	W	: N89-2606-45
				X	: N89-2606-46

I numbers larger than 700 are not supplied.

F	: N89-2608-46	N	: N19-0366-04
J	: N09-2769-05	O	: N19-0891-04
K	: N09-2817-05	P	: N19-1105-04
L	: N09-2913-05	Q	: N19-1318-04
M	: N09-2914-05	R	: N38-2625-46

S	: N39-2025-46
T	: N83-2008-46
U	: N86-2008-46
V	: N89-2006-46
W	: N89-2606-45
X	: N89-2606-46

Parts with the exploded numbers larger than 700 are not supplied.